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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,807	02/25/2004	Hui-Mei Chen	MEG02-005	3341

7590 03/21/2007  
GEORGE O. SAILE  
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EXAMINER

AU, BAC H

ART UNIT PAPER NUMBER

2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/786,807		CHEN ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Bac H. Au		2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15, 17, 27 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15, 17, 27 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment dated February 16, 2007 in which claims 15, 17, 27 and 30 were amended has been entered.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 15, 17, 27, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsukamoto (U.S. Pat. 5554859).

Regarding claims 15, 17, 27, and 30, Tsukamoto [Figs.3A-B] discloses a method for fabricating a semiconductor wafer with a patterned contact point [3007; col.19 lines 17-20] comprising gold, comprising:

cleaning said patterned contact point, wherein said cleaning said patterned contact point comprises ion milling;

wherein said ion milling comprises using argon [Col.19 lines 22-23];

a method for fabricating a semiconductor wafer, comprising:

depositing a patterned metal bump [3007] on a topmost patterned circuit layer of said semiconductor wafer, wherein said patterned metal bump has a substantially flat top surface; and

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cleaning said patterned metal bump, wherein said cleaning said patterned metal bump comprises ion milling [Col.19 lines 22-23];

wherein said ion milling comprises using argon [Col.19 lines 22-23].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15, 17, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Pub. 2003/0006271) in view of Bakker (U.S. Pub. 2004/0218157).

Regarding claims 15, 17, 27, and 30, Chen [Figs.1-3] discloses a method for fabricating a semiconductor wafer with a patterned contact point [307] comprising gold, comprising:

cleaning said patterned contact point [Para. 13];

a method for fabricating a semiconductor wafer, comprising:

depositing a patterned metal bump [307] on a topmost patterned circuit layer of said semiconductor wafer, wherein said patterned metal bump has a substantially flat top surface; and

cleaning said patterned metal bump.

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Chen discloses cleaning the patterned contact point; patterned metal bump; by plasma cleaning with argon, but fails to explicitly disclose the cleaning comprising ion milling using argon. However, Bakker [Paras.54,81,82] discloses wherein said cleaning said patterned contact point comprises ion milling; and wherein said ion milling comprises using argon.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Bakker into the method of Chen to include wherein the cleaning comprising ion milling with argon. Bakker discloses cleaning through dry etching processes such as plasma and ion milling are suitable alternatives.

The ordinary artisan would have been motivated to look to analogous art teaching alternative suitable or useful methods of performing the disclosed steps set forth above. Art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

### ***Response to Arguments***

4. Applicant's arguments filed February 16, 2007 have been fully considered but they are not persuasive. Applicant states that the ion milling process of Tsukamoto does not disclose the claimed cleaning limitation since cleaning the patterned contact point or metal bump means to remove micro contaminants from the patterned contact point or metal bump, and cannot be defined as removing extraneous undesired gold layer in order to form the desired shape. This is respectfully traversed. The ion milling process of Tsukamoto removes

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extraneous undesired gold layer, which would inherently remove micro contaminants from the patterned contact point or metal bump. Consequently, the ion milling process of Tsukamoto does disclose cleaning the patterned contact point or metal bump. Overall, applicant's arguments are not persuasive, and the claims stand rejected.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-8795. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BHA

  
Zandra V. Smith  
Supervisory Patent Examiner  
19 March 2007